

### ABSTRACT

The present invention is directed to methods and apparatus for accurately controlling the quantity of material dispensed from dispensing systems. In one aspect of the present

- 5 invention, a dispensing system includes a calibration system, which collects and measures an amount of material dispensed during a calibration routine. The calibration dispensing pattern and the amount of material dispensed from the dispensing system during the calibration routine are representative of an actual dispensing pattern. The measured amount of material collected during the calibration routine is compared with a target quantity. The dispensing  
10 system is adjusted if the difference between the quantity of collected material and the target quantity is greater than a predetermined tolerance.

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